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Our Ref. No. 6682-65310
Inventor Name: Lawrence E. Fosdick et al.
For: GLUCOSAMINE AND METHOD OF MAKING GLUCOSAMINE . . .
Express Mail No. EV339204158US
Mailed: October 13, 2003

PRIOR ART

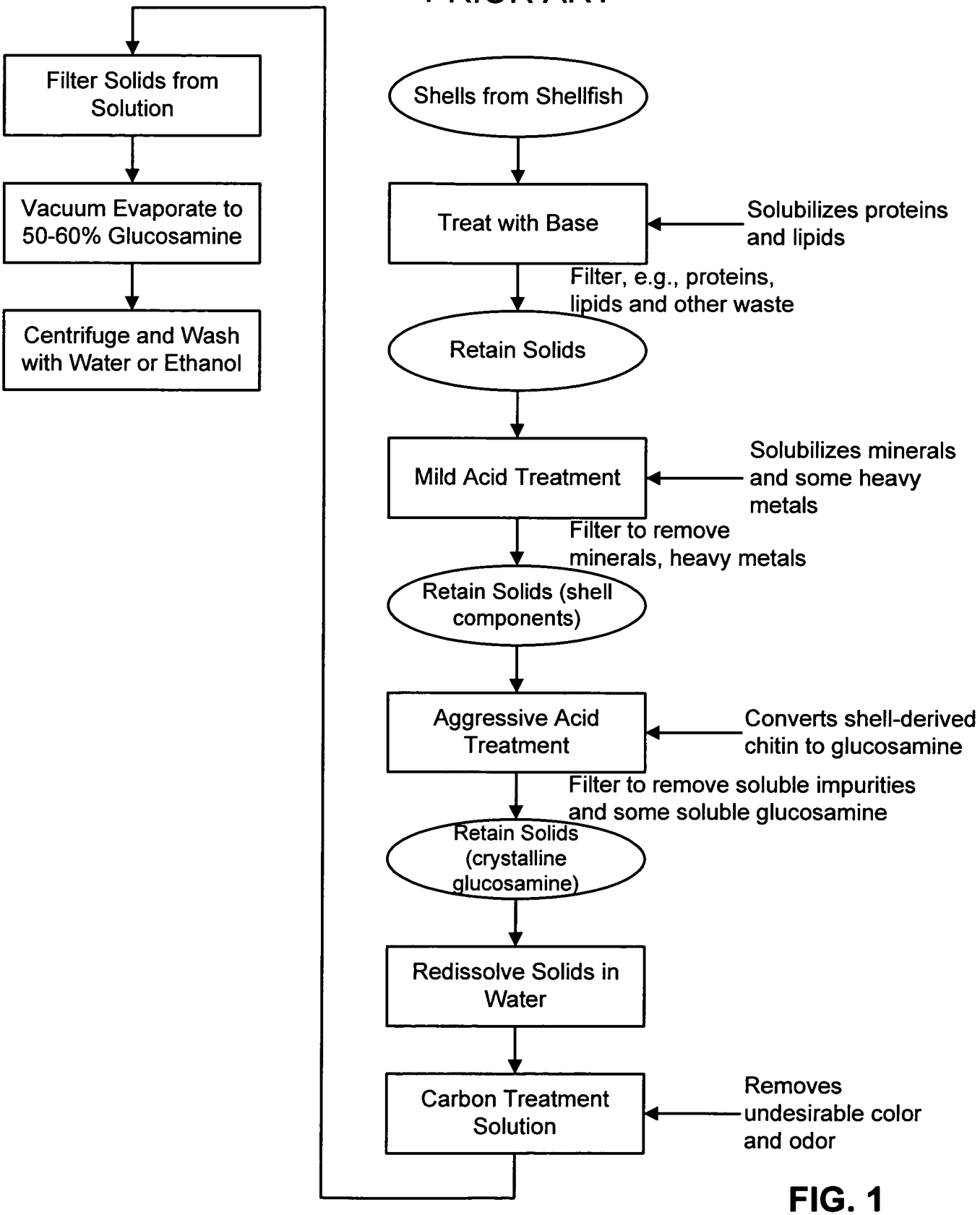
Shells from Shellfish
Treat with Base
Solubilizes proteins and lipids
Filter, e.g., proteins, lipids and other waste
Retain Solids
Mild Acid Treatment
Solubilizes minerals and some heavy metals
Filter to remove minerals, heavy metals
Retain Solids (shell components)
Aggressive Acid Treatment
Converts shell-derived chitin to glucosamine
Filter to remove soluble impurities and some soluble glucosamine
Retain Solids (crystalline glucosamine)
Redissolve Solids in Water
Carbon Treatment Solution
Removes undesirable color and odor
Filter Solids from Solution
Vacuum Evaporate to 50-60% Glucosamine
Centrifuge and Wash with Water or Ethanol

FIG. 1

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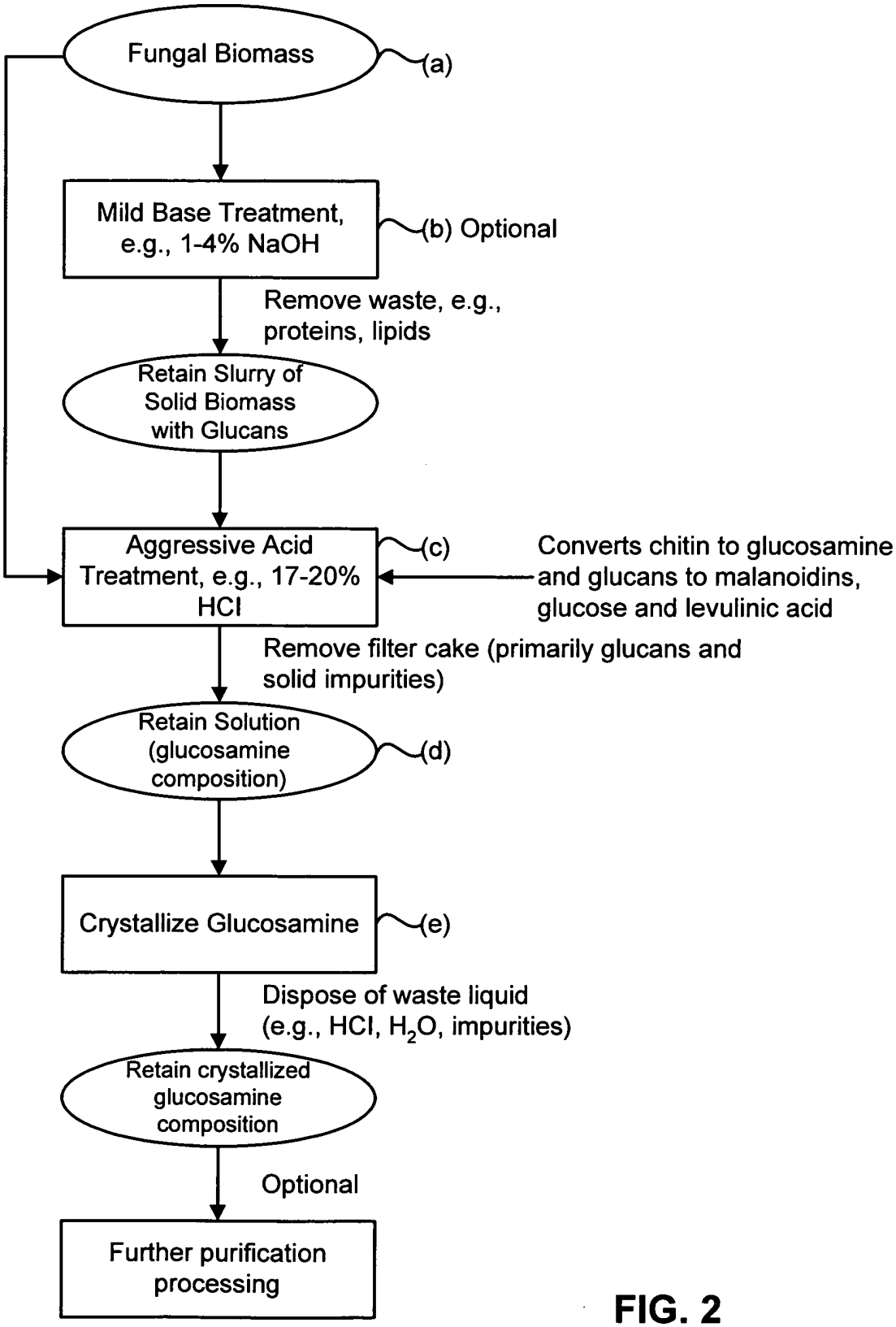
Fungal Biomass
(a)
Mild Base Treatment, e.g., 1-4% NaOH
(b) Optional
Remove waste, e.g., proteins, lipids
Retain Slurry of Solid Biomass with Glucans
Aggressive Acid Treatment, e.g., 17-20% HCl
(c)
Converts chitin to glucosamine and glucans to malanoidins, glucose and levulinic acid
Remove filter cake (primarily glucans and solid impurities)
Retain Solution (glucosamine composition)
(d)
Crystallize Glucosamine
(e)
Dispose of waste liquid (e.g., HCl, H_2O, impurities)
Retain crystallized glucosamine composition
Optional
Further purification processing

FIG. 2

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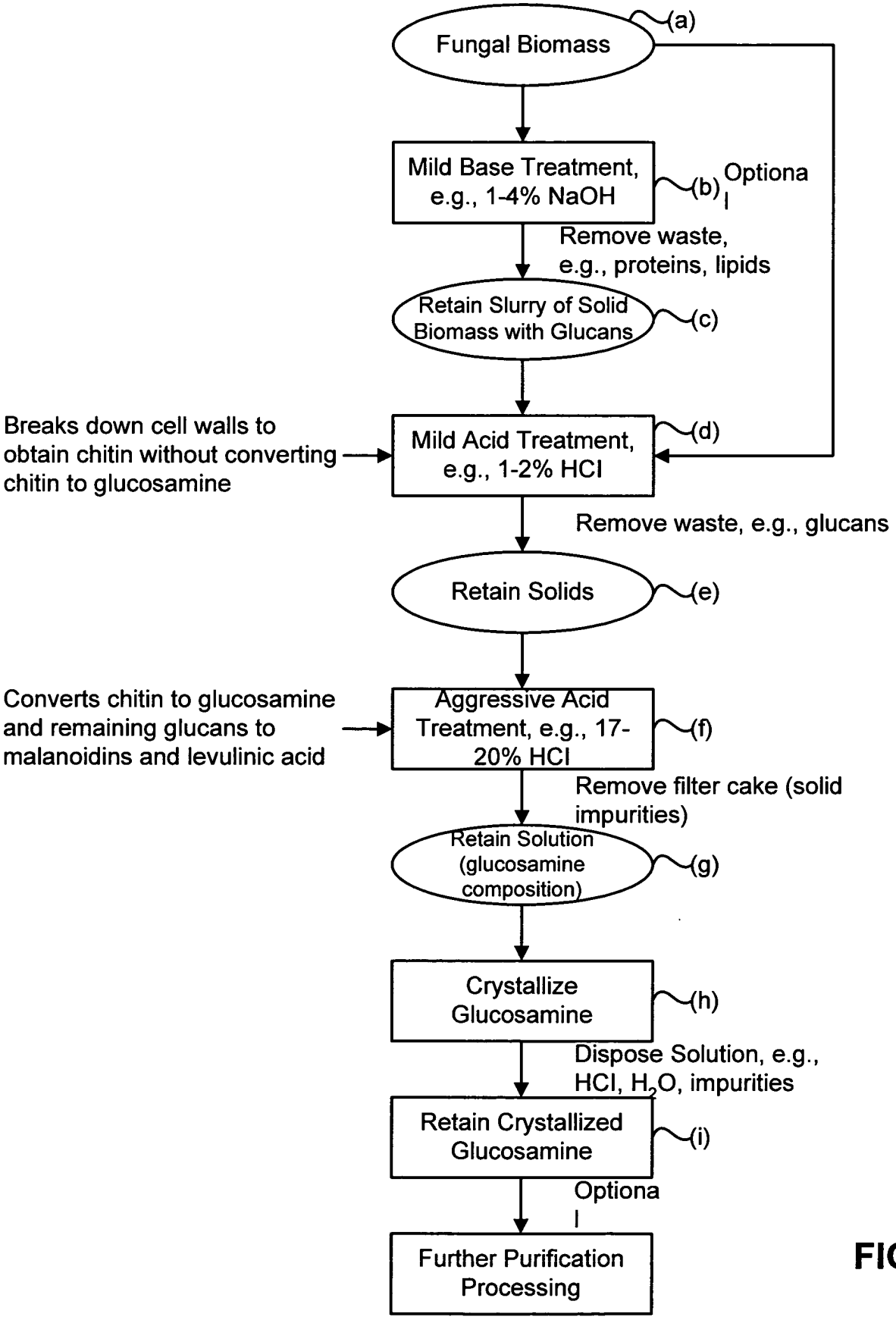

FIG. 3

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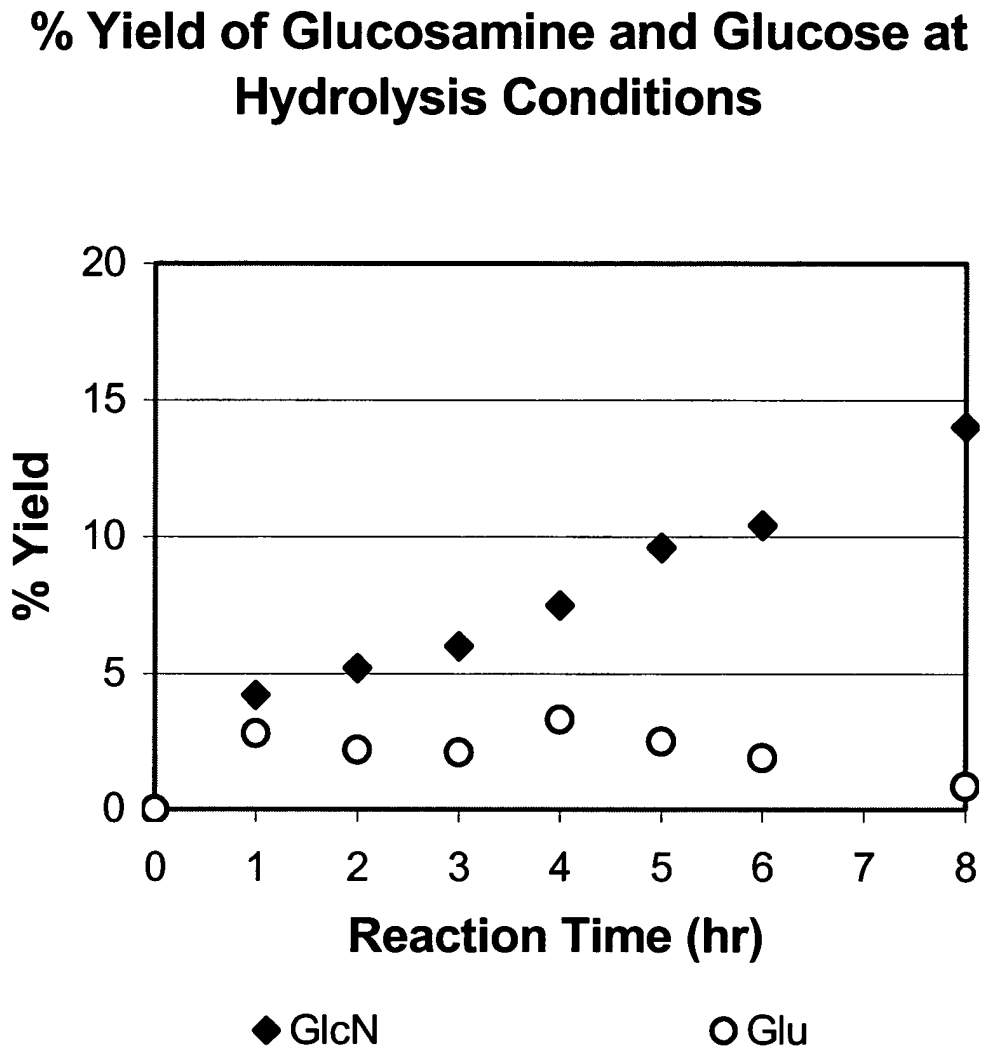

FIG. 4

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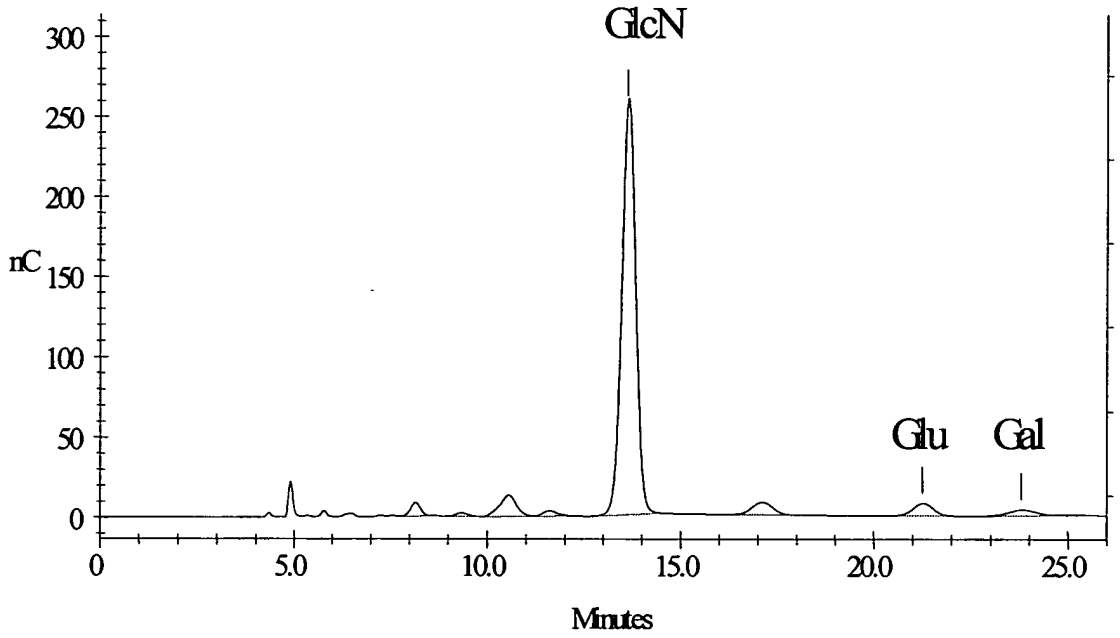

FIG. 5

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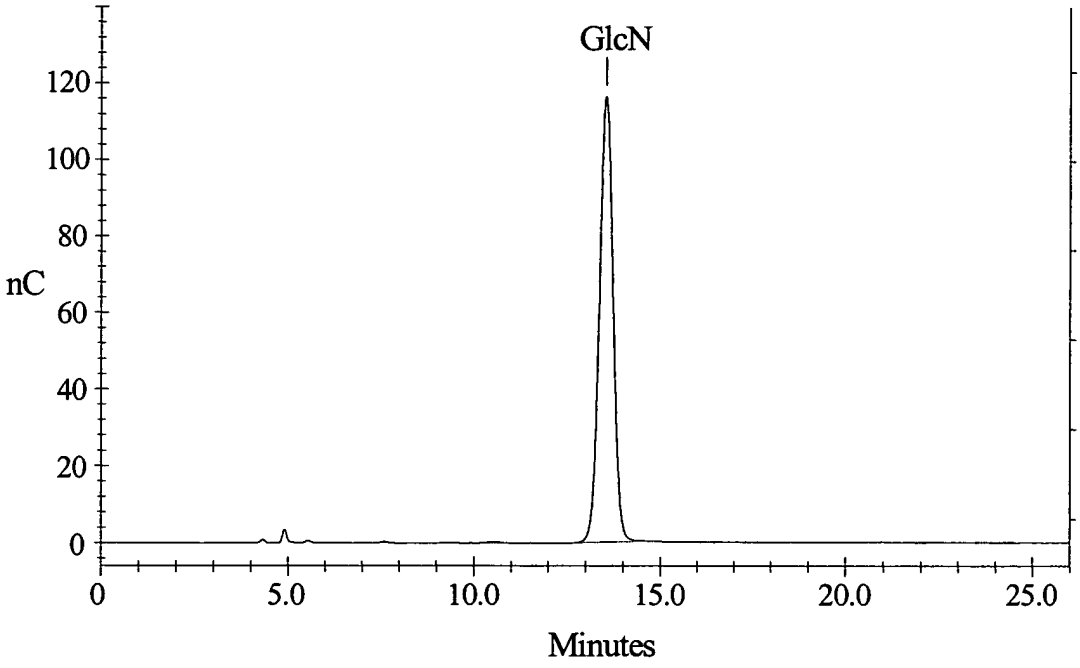

FIG. 6

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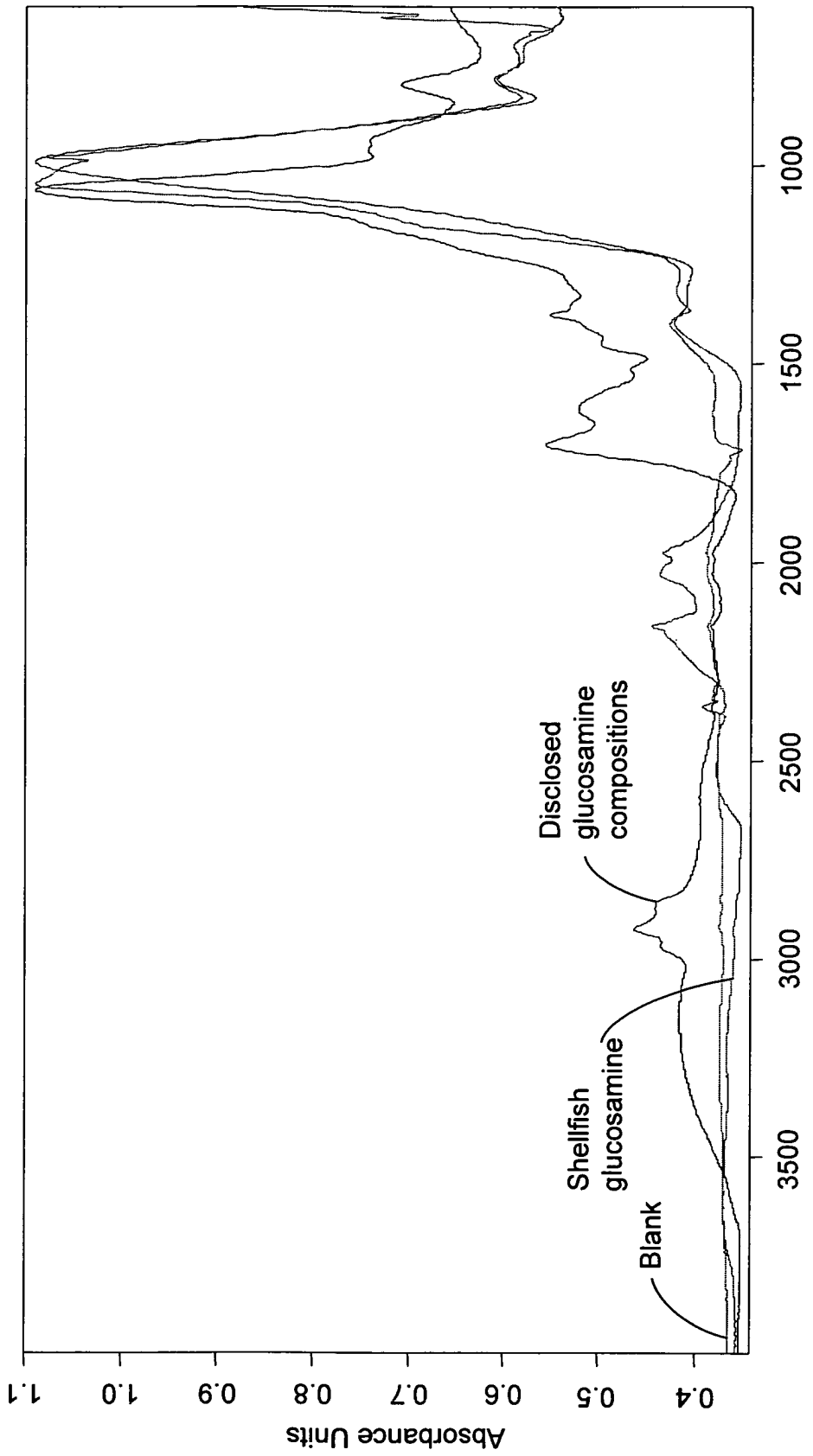

FIG. 7

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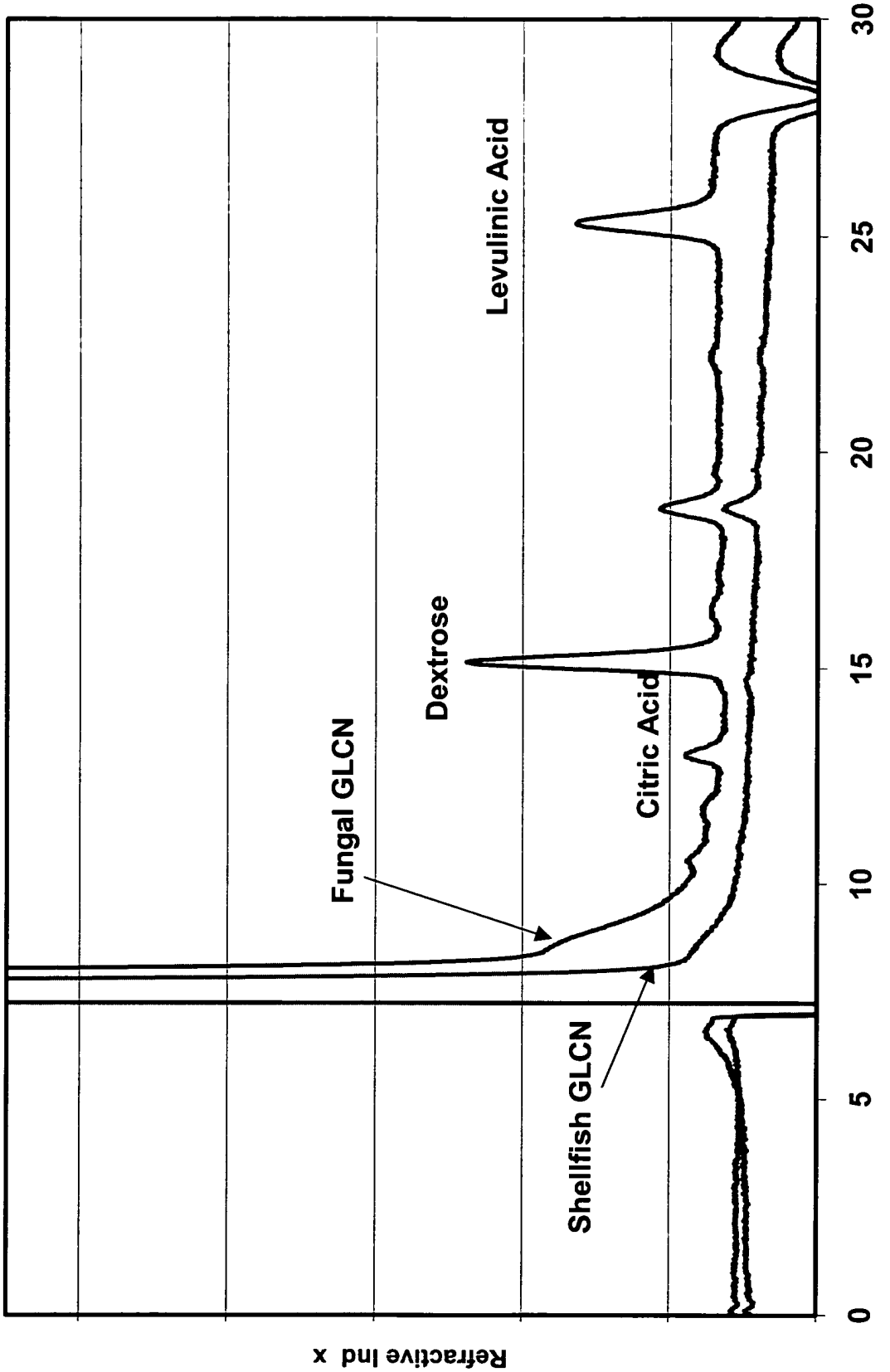

Fig. 8